

sponding to this formula is also laid down, and its agreement with the adjusted value placed in evidence. The author concludes with some remarks on an error fallen into by Dr. Price, depending on the periodical payment of interest; and with a comparison of climacteric years, as taken from different tables.

Account of an Experiment on the Elasticity of Ice. By Benjamin Bevan, Esq. In a Letter to Dr. Thomas Young, For. Sec. R.S. Read April 27, 1826. [*Phil. Trans.* 1826, p. 304.]

Mr. Bevan took the opportunity of the severe frost of the last winter to determine the modulus of elasticity of ice, which he did by cutting a rectangular plate of that substance from the surface of a pond of 100 inches in length, 10 in width, and about 4 in thickness. The deflection produced by a weight of 25 lbs. was 0.206 inches, from which he concludes the modulus of elasticity to be 2,100,000 feet.

The modulus for water he states at 2,178,000 feet, on a certain hypothesis respecting its cubical compression.

Results of the Application of Captain Kater's Floating Collimator to the Astronomical Circle at the Observatory of Trinity College, Dublin; and Remarks relative to those Results. By the Rev. J. Brinkley, D.D. F.R.S. P.R.I.A. Communicated by the Board of Longitude February 2, 1826. Read April 27, 1826. [*Phil. Trans.* 1826, p. 307.]

Dr. Brinkley, in this communication, states a number of observations made with the floating collimator of Captain Kater, as applied to the Dublin circle, in which he observes it affords the means of ascertaining the index error with as great precision as by reversion, and that in several points of view it is undoubtedly superior to that method. The reversing principle of the Dublin circle, he observes, serves very conveniently for a measure of the accuracy of the floating collimator, and serves to show very satisfactorily, that applying this instrument to any circle will introduce no error depending on the collimator itself.

The author regards the results of these observations as highly favourable to the principle of the collimator, which he considers as a new astronomical power, and as even belonging to a more advanced era of practical astronomy than the present.

The observations consist of, First, the mean zenith distances of a number of stars, deduced solely by the application of the index correction, as determined by the collimator. In this case the circle was used as a mural circle, or rather as two mural circles, having been used with its face east and also west. Secondly, the inclination of the line of collimation of the collimator, as determined on different days. As this appears to have been very permanent (though such permanence is not essential in practice), he concludes that the collimator is applicable to the most powerful instruments. Thirdly,

the index corrections as determined by the collimator. Fourthly, the index corrections as determined by reversion from several stars.

On the Means of facilitating the Observation of distant Stations in Geodetical Operations. By Lieutenant Thomas Drummond, of the Royal Engineers. Communicated April 14, 1826, by Lieut.-Colonel H. Colby, F.R.S. Read May 4, 1826. [*Phil. Trans.* 1826, p. 324.]

In consequence of the Report of a Select Committee of the House of Commons in June 1824, it was resolved that a new survey of Ireland should be undertaken; and the author was directed by Colonel Colby to consider the most effective means of rendering distant stations observable in the prevalent hazy state of that country.

After adverting to some of the usual means resorted to in such cases, and showing their inefficiency for his present purpose, and after noticing some unsatisfactory trials of brilliant pyrotechnical preparations, and of the combustion of phosphorus in oxygen gas, the author attempted applying to the purpose in view the brilliant light emanating from intensely heated quicklime. To obtain the requisite temperature, he passed a stream of oxygen through the flame of alcohol; and this jet being directed upon a small spherical piece of quicklime placed in the focus of a proper reflector, the light which it emitted was found to have 83 times the intensity of the brightest part of the flame of an Argand burner. Other substances, such as zirconia, magnesia, and oxide of zinc, were tried as substitutes, but were found very inferior as sources of light, when ignited, to quicklime from chalk, which moreover admits of being conveniently turned in a lathe into focal balls of any requisite dimensions. Mr. Drummond proceeds to detail the necessary application of this system to a case of considerable difficulty that occurred at the end of last season. Slieve Snaght, the highest hill of Innishowen (2100 feet), and 15 miles North of Londonderry, forms an important point in the triangulation connecting the North of Ireland with the Western Isles of Scotland. On the 23rd of August a conspicuous object was placed upon its summit, that it might be observed from Divvis Hill, near Belfast; but till the 26th of October it remained so enveloped in fog, as to frustrate all efforts at observation, the distance between the stations being $66\frac{1}{4}$ miles. On the 27th of October the author proceeded to the hill; and after some delay from tempestuous weather, brought the new instrument into use, which was brilliantly visible at the other station, and thus successfully terminated the observations.

This paper concludes with notices of some other proposed applications of these sources of intense light, more especially to certain lighthouses, in which the author thinks that the additional expense would be amply counterbalanced by the advantages of so powerful a source of illumination.

In a note appended to this paper by Mr. Herschel, he observes, that red, yellow, and green, appear to be the predominant rays in